What is claimed is:

1. A composition comprising a ceramic of formula 1 below:

$$Pb_{(1-z)}M_z(Mg_{1/3}Nb_{2/3})_x(Zr_yTi_{1-y})_{1-x}O_3 \quad (1)$$

wherein M is selected to be either Sr or Ba, x is selected to be between about 0.1 and about 0.7, y is selected to be between about 0.20 and about 0.70, and z is selected to be between about 0.02 and about 0.1.

2. The composition of claim 1 comprising a dopant selected from the group consisting of: MnO_2, Ni_2O_3, TeO_2, MoO_3, Nb_2O_5, Ta_2O_5, Y_2O_3, $CoCO_3$, Sm_2O_3, and mixtures thereof.

3. The composition of claim 2 containing between about 0.2 and about 0.4 wt % MnO_2 and between about 1.4 and about 1.8 wt % Nb_2O_5.

4. The composition of claim 1 wherein M is Ba.

5. The composition of claim 1 wherein M is Sr.

6. The composition of claim 5 wherein z is selected to be between about 0.4 and about 0.7.

7. The composition of claim 1 wherein x is selected to be between about 0.2 and about 0.4

8. The composition of claim 7 wherein y is selected to be between about 0.2 and about 0.50.

9. The composition of claim 1 wherein y is selected to be between about 0.2 and about 0.50.

10. The composition of claim 9 wherein z is selected to be between about 0.04 and about 0.08.

11. The composition of claim 1 wherein z is selected to be between about 0.04 and about 0.08.

12. The composition of claim 1 having a density between about 7.65 and about 7.8 g/cc.

13. A piezoelectric element comprising the composition of claim 1 and having at least two electrodes formed thereon.

14. The composition of claim 1 exhibiting a mechanical quality factor Q_m of at least 900.

15. The composition of claim 1 exhibiting a relative permittivity (ε) of at least 2000 F/m.

16. The composition of claim 1 exhibiting a relative permittivity (ε) of at least 2500 F/m.

17. The composition of claim 1 exhibiting a piezoelectric strain constant (d_{33}) of at least 300 PC/N.

18. The composition of claim 1 provided as a piezoelectric ceramic.

19. The composition of claim 1 provided as a ferroelectric ceramic.

20. A method of preparing a piezoelectric ceramic, said method comprising:

providing a powdered mixture comprising lead, magnesium, niobium zirconium, titanium, and at least one of strontium or barium;

pulverizing the powdered mixture provide a homogeneous mixture having an average particle size of less than about 2 micrometers (2 μm);

calcining the homogeneous mixture at a temperature of between about 850°C and about 1000°C to provide a ceramic composition;

molding the ceramic composition into a green article of a desired shape;

sintering the green article at a selected temperature of between about 1000°C and about 1300°C to provide a monolithic ceramic article having a composite perovskite crystal structure; and

poling the monolithic ceramic article at a voltage selected to be between about 50 to about 80 V/mil thickness of material at a temperature of between about 100°C and about 115°C to provide the piezoelectric ceramic.

21. The method of claim 20 wherein said molding comprises press molding the homogeneous mixture to provide a monolithic article having a density of a between about 3.8 and about 4.5 g/cc.

22. The method of claim 20 wherein said molding comprises extruding the homogeneous mixture through a die.

23. The method of claim 20 comprising pulverizing the ceramic composition to have an average particle size of between about 0.5 μm and about 2 μm.

24. The method of claim 23 comprising combining the ceramic with a binder.

25. The method of claim 20 comprising cutting the piezoelectric ceramic to provide a plurality of piezoelectric ceramic elements.

26. The method of claim 20 comprising laminating two or more of the plurality of piezoelectric ceramic elements together.

27. The method of claim 20 wherein said sintering comprises:

gradually heating the green article to a temperature level of 800°C to about 1200°C over a period of time ranging from about 6 hours to about 12 hours,

thereafter increasing the temperature level to between about 1250°C and about 1300°C over a period of time ranging between about 2 hours to about 8 hours,

maintaining the green article at a temperature level of between about 1250°C and 1300°C for a period of time selected to be between about 1 hour and about 3 hours; and

thereafter cooling the green article to ambient temperature.

28. The method of claim 20 wherein said poling comprises:

heating the monolithic ceramic at a rate of about 1 degree C per minute maintaining the monolithic ceramic at the elevated temperature for a dwell time selected to be between about 3 and about 8 minutes.

29. The method of claim 28 comprising gradually increasing the voltage across the monolithic ceramic at a rate of between about 80 to 100 v/second.

30. The method of claim 20 wherein said providing a powdered mixture comprises including one or more dopant precursors.

31. The method of claim 30 where said sintering provides a composite perovskite crystal structure with one or more added dopants.